

The Nuclear Security Enterprise is at the highest level of activity since the Cold War with five major warhead modernization programs underway.

## OVERVIEW

NNSA's warhead modernization activities ensure that the U.S. nuclear weapons stockpile continues to meet Department of Defense (DoD) requirements while enhancing safety and security. NNSA's modernization efforts address aging, unavailability of replacement parts, and integration with DoD's modernized nuclear weapons delivery systems without providing new military capabilities or the need for underground nuclear testing.

## TYPES

NNSA executes **four types** of warhead modernization activities:

**Life Extension Programs (LEP):** A program to refurbish warheads of a specific weapon type to extend the service life of a weapon. LEPs are designed to extend the life of a warhead by 20 to 30 years while increasing safety and security. NNSA is currently executing two LEPs: the **B61-12**, a gravity bomb for the U.S. Air Force, and the **W80-4** for use in the U.S. Air Force's new Long Range Standoff (LRSO) cruise missile.

**Modifications:** A program that changes a current stockpile weapon-type's operational capabilities. A modification may enhance the margin against failure, increase safety, improve security, replace limited life components, or address identified defects and component obsolescence. NNSA is currently executing one modification, the **W87-1**, which will replace the legacy W78 to provide continuity for the ground-based U.S. nuclear deterrent. NNSA completed assembly of and delivered the **W76-2** to the U.S. Navy for its Trident II D5 submarine-launched ballistic missile (SLBM) in FY 2020, making it the latest completed modification activity.

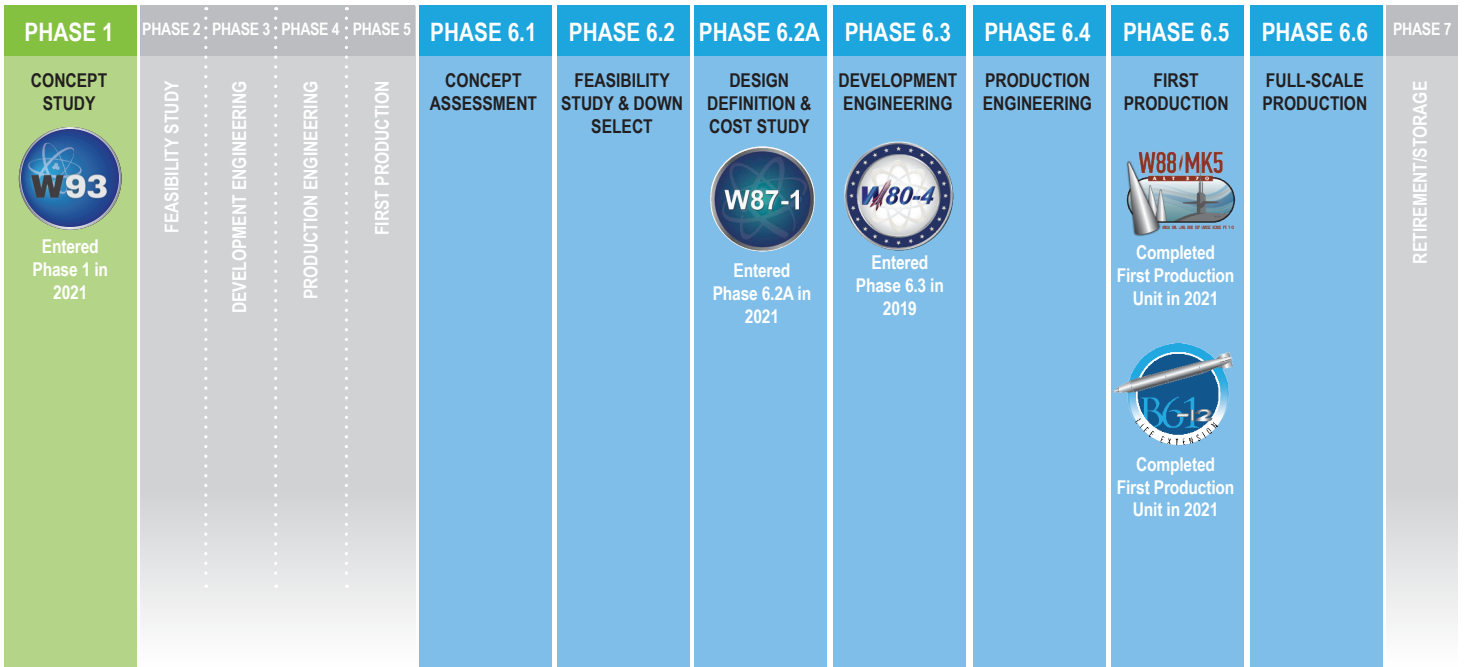
**Alterations (Alt):** A material change to, or a prescribed inspection of, a nuclear weapon or major assembly that does not alter the operational capability yet is sufficiently important to the user in terms of assembly, maintenance, storage, or test operations. NNSA is currently executing one major alteration, the **W88 Alt 370**, for the U.S. Navy's Trident II D5 SLBM.

**Warhead Acquisition:** Acquisition of a warhead to meet military requirements that cannot be met by an existing stockpile warhead, but is based on previously tested designs and components that will not require additional explosive nuclear testing to certify and deploy to the active stockpile. NNSA is currently executing one warhead acquisition program, the **W93**, for use by the Navy's ballistic missile submarine force.



# MODERNIZATION MILESTONES

The U.S. nuclear warhead lifecycle begins with Phase One: Concept Study and ends with Phase Seven: Retirement, Dismantlement, and Disposition.



Air-launched cruise missile



Ground-launched intercontinental ballistic missile



Submarine-launched ballistic missile